CLAIMS

We claim:

1. A dry formulation, comprising:

at least two doses of coated drug particles having an average particle size of about 50 μm to about 600 μm, each coated drug particle comprising a core comprising a drug, and a hydrophobic polymer film coating at least a portion of the core; and

a viscosity enhancing substance in an amount effective to maintain the at least two doses of coated drug in a substantially homogeneous suspension for at least 24 hours at about 20°C to about 30°C, after combination with about 2 ml to about 60 ml of an aqueous liquid per dose of the coated drug and mixing in the presence of air.

2. The dry formulation of claim 1, wherein the hydrophobic polymer film is selected from the group consisting of: vinyl acetate, vinyl chloride, vinyl carbonate, methacrylic acid, a polymethacrylic acid copolymer, other polymethylmethacrylates, ethyl cellulose, nitrocellulose, vinylidene chloride-acrylonitrile copolymer, acrylonitrile-styrene copolymer, polyethylene, polyethylene oxide, polystyrene, ethylene vinyl acetate, cellulose acetate, cellulose acetate phthalate, cellulose acetate butyrate, hydroxypropylmethylcellulose phthalate.

3. The dry formulation of claim 1, wherein the hydrophobic polymer film comprises methacrylic acid or a polymethacrylic acid copolymer.

4. The dry formulation of claim 1, wherein the hydrophobic polymer film further comprises a plasticizer.

5. The dry formulation of claim 1, wherein the drug is an oxazolidinone antibiotic.

6. The dry formulation of claim 5, wherein the oxazolidinone antibiotic is linezolid.

7. The dry formulation of claim 1, wherein the viscosity enhancing substance is selected from the group consisting of an alginate, carageenin, agar-agar, tragacanth gum, xanthan gum, guar gum, caroba gum, karaya gum, modified corn starch, carboxymethyl cellulose, and crystalline cellulose alone or in combination with other hydrocolloids.

8. The dry formulation of claim 1, wherein the viscosity enhancing substance is a mixture of xanthan gum, microcrystalline cellulose, and sodium carboxymethylcellulose.

9. The dry formulation of claim 8, wherein the weight ratio of the xanthan gum to the microcrystalline cellulose and the carboxymethylcellulose in the mixture is about 1:2 to about 1:0.3.

10. The dry formulation of claim 1, wherein the viscosity enhancing substance is present in an amount such that the suspension has a viscosity of at least about 1500 cps.

11. The dry formulation of claim 10, wherein the viscosity enhancing substance is present in an amount such that the suspension has a viscosity of at least about 1500 cps to about 4000 cps.

12. The dry formulation of claim 1, wherein the coated drug particles have an average particle size of about 100 μm to about 600 μm.

13. The dry formulation of claim 1, further comprising at least one taste-masking substance.

14. The dry formulation of claim 13, wherein the at least one taste-masking substance is a sugar.

15. The dry formulation of claim 14, wherein the sugar is sucrose.

16. The dry formulation of claim 13, wherein the taste-masking substance is an artificial sweetener.

17. The dry formulation of claim 13, wherein the at least one taste-masking substance is a flavoring agent.

18. The dry formulation of claim 1, wherein the aqueous liquid is water.

19. The dry formulation of claim 1, wherein the coated drug particles are suspended in the aqueous liquid within five (5) minutes of combination of the dry formulation with the aqueous liquid.

20. The dry formulation of claim 1, wherein the dry formulation forms a suspension with a homogeneous dispersion of air bubbles and solid particles that do not interact with each other after the mixing in the presence of the air.

21. . A dry formulation, comprising:

at least two doses of coated drug particles having an average particle size of about 50 μm to about 600 μm, each coated drug particle comprising a core comprising a drug, and a hydrophobic polymer film coating at least a portion of the core;

xanthan gum; and

a combination of microcrystalline cellulose and sodium carboxymethylcellulose;

wherein the weight ratio of the xanthan gum to the combination of microcrystalline cellulose and sodium carboxymethylcellulose is about 1:2 to about 1:0.2, and wherein a suspension with a viscosity of at least about 1500 cps is formed after combination of the dry formulation with about 2 ml to about 60 ml of an aqueous liquid per dose of the coated drug particles.

22. The dry formulation of claim 21, wherein the suspension formed after combination of the dry formulation with the aqueous liquid has a viscosity of about 1500 cps to about 4000 cps.

23. The dry formulation of claim 21, wherein the hydrophobic polymer is selected from the group consisting of: vinyl acetate, vinyl chloride, vinyl carbonate, methacrylic acid, a polymethacrylic acid copolymer, other polymethylmethacrylates, ethyl cellulose, nitrocellulose, vinylidene chloride-acrylonitrile copolymer, acrylonitrile-styrene copolymer, polyethylene, polyethylene oxide, polystyrene, ethylene vinyl acetate, cellulose acetate, cellulose acetate phthalate, cellulose acetate butyrate, hydroxypropylmethylcellulose phthalate.

24. The dry formulation of claim 21, wherein the hydrophobic polymer is methacrylic acid or a polymethacrylic acid copolymer.

25. The dry formulation of claim 21, the hydrophobic polymer film further comprising a plasticizer.

26. The dry formulation of claim 21, wherein the drug is an oxazolidinone antibiotic.

27. The dry formulation of claim 21, wherein the oxazolidinone antibiotic is linezolid.

28. The dry formulation of claim 21, wherein the combination of microcrystalline cellulose and sodium carboxymethylcellulose is Avicel® RC-591.

29. The dry formulation of claim 21, further comprising at least one taste-masking substance.

30. The dry formulation of claim 30, wherein the at least one taste-masking substance is a sugar.

31. The dry formulation of claim 30, wherein the sugar is sucrose.

32. The dry formulation of claim 29, wherein the taste-masking substance is an artificial sweetener.

33. The dry formulation of claim 29, wherein the at least one taste-masking substance is a flavoring agent.

34. The dry formulation of claim 21, wherein the dry formulation forms a suspension with a homogeneous dispersion of air bubbles and solid particles that do not interact with each other after combination with the aqueous solution and mixing in the presence of air.

35. A method of producing a multi-dose suspension, comprising the steps of:

a) providing a dry formulation comprising:

at least two doses of coated drug particles having an average particle size of about 50 μm to about 600 μm, each coated drug particle comprising a core comprising a drug, and

a hydrophobic polymer film coating at least a portion of the core, xanthan gum, and a combination of microcrystalline cellulose and sodium carboxymethylcellulose,

wherein the weight ratio of the xanthan gum to the combination of microcrystalline cellulose and sodium carboxymethylcellulose is about 1:2 to about 1:0.2; and

b) combining the dry formulation with an aqueous solution and agitating the same until a suspension is formed, having a viscosity of at least about 1500 cps.

36. The method of claim 35, wherein the hydrophobic polymer is selected from the group consisting of: vinyl acetate, vinyl chloride, vinyl carbonate, methacrylic acid, a polymethacrylic acid copolymer, other polymethylmethacrylates, ethyl cellulose,

nitrocellulose, vinylidene chloride-acrylonitrile copolymer, acrylonitrile-styrene copolymer, polyethylene, polyethylene oxide, polystyrene, ethylene vinyl acetate, cellulose acetate, cellulose acetate phthalate, cellulose acetate butyrate, hydroxypropylmethylcellulose phthalate.

37. The method of claim 35, wherein the hydrophobic polymer is methacrylic acid or a polymethacrylic acid copolymer.

38. The method of claim 35, wherein the drug is an oxazolidinone antibiotic.

39. The method of claim 38, wherein the oxazolidinone antibiotic is linezolid.

40. The method of claim 35, wherein the coated drug particles have an average particle size of about 100 μm to about 600 μm.

41. The method of claim 35, wherein the viscosity of the suspension formed in step (b) is at least about 1000 cps.

42. The method of claim 35, wherein the dry formulation provided in step (a) further comprises at least one taste-masking substance.

43. The method of claim 42, wherein the at least one taste-masking substance is a sugar.

44. The method of claim 43, wherein the sugar is sucrose.

45. The method of claim 35, wherein the aqueous solution is water.

46. The method of claim 35, wherein the suspension is substantially homogeneous.

47. The method of claim 46, wherein the suspension comprising a homogeneous dispersion of air bubbles and solid particles that do not interact with each other after mixing in the presence of the air.

48. A method of treating or preventing a gram-positive bacterial infection, comprising orally administering at least two doses of a multi-dose suspension to a subject, the multi-dose suspension comprising:

at least two doses of coated oxazolidinone antibiotic drug particles suspended in about 2 ml to about 60 ml of an aqueous liquid per dose of the coated drug, the coated drug particles having an average particle size of about 50 μm to about 600 μm, each coated drug particle comprising a core

comprising an oxazolidinone antibacterial drug, and a hydrophobic polymer film coating at least a portion of the core; and

a viscosity enhancing substance in an amount effective to maintain the at least two doses of coated oxazolidinone antibiotic drug particles in a substantially homogeneous suspension in the aqueous solution for at least 24 hours at about 20°C to about 30°C, after combination with and mixing in the presence of air.

49. The method of claim 48, wherein the oxazolidinone antibiotic drug is linezolid.

50. The method of claim 48, wherein the multi-dose suspension is orally administered to treat or prevent infection of the subject by at least one bacteria from a genus selected from the group consisting of: *Staphylococcus, Streptococcus, Enterococcus, Bacillus, Corynebacterium, Chlamydia* and *Neisseria.*